

Ribs strong, broad, continued far backwards, seven true and three false; one false one placed anteriorly, the other two posteriorly.

Vertebræ short, strong, the lateral processes of the caudal ones much lengthened.

Cer. 15. Dor. 6. Sac. 19? Caud. 9.

The three anterior sacral vertebræ have ribs attached; the posterior caudal one is pointed at the extremity.

REMARKS.—The anatomy of the above bird, as might have been expected from its external appearance, presents a strong resemblance to the Toti-palmate division of Water-birds. The trachea is precisely that of a Cormorant, and is also furnished with the same muscles of voice.

The tongue and digestive organs resemble those of the sea- or shell-feeding Ducks of the genera *Clangula*, *Melanitta*, and *Nyroca*. I suspect, however, that they will be found to come more nearly to *Micropterus*, King, than any other genus; but there at present being no published account of the anatomy of this bird, of course it is merely conjecture.

The skeleton may be said generally to resemble the Cormorants and Gannets, with the exception of the head, which approaches very nearly in form to that of *Clangula*.

The posterior margin of the sternum resembles that of *Sula*; but in being much broader posteriorly than anteriorly, it resembles the *Fuliginæ*. The remainder of this bone resembles very closely that of the Common Cormorant; nearly the only distinction being, that the anterior edge of the keel is not much produced forwards, as in that bird, in which respect it agrees with *Melanitta*.

The pelvis, with the exception of its being rather broader posteriorly in proportion to its length, is precisely that of a Toti-palmate bird.

The coracoids, in not being so long as among the Cormorants, the os furcatum, the wings and leg-bones, resemble in every particular those of the Sea-ducks.

XXIII.—Notices of European Herbaria, particularly those most interesting to the North American Botanist*.

[Concluded from p. 140.]

BESIDES the herbaria already mentioned, there are two others in London of more recent formation, which possess the highest interest as well to the general as to the American botanist, viz. that of Professor Lindley, and of Mr. Bentham. Both comprise very complete sets of the plants collected by Douglas in Oregon, California, and the Rocky Mountains, as well as those raised from seeds or bulbs, which he transmitted to England, of which a large portion have, from time to time, been published by these authors. Mr. Bentham's herbarium is, probably, the richest and most authentic collection in

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The herbarium of Sir William J. Hooker, at Glasgow, is not only the largest and most valuable collection in the world, in the possession of a private individual, but it also comprises the richest collection of North American plants in Europe. Here we find nearly complete sets of the plants collected in the Arctic voyages of discovery, the overland journeys of Franklin to the polar sea, the collections of Drummond and Douglas in the Rocky Mountains, Oregon, and California, as well as those of Professor Scouler, Mr. Tolmie, Dr. Gairdner, and numerous officers of the Hudson's Bay Company, from almost every part of the vast territory embraced in their operations, from one side of the continent to the other. By an active and prolonged correspondence with nearly all the botanists and lovers of plants in the United States and Canada, as well as by the collections of travellers, this herbarium is rendered unusually rich in the botany of this country; while Drummond's Texan collections, and many contributions from Mr. Nuttall and others, very fully represent the flora of our southern and western confines. That these valuable materials have not been buried, nor suffered to accumulate to no purpose or advantage to science, the pages of the 'Flora Boreali-Americana,' the 'Botanical Magazine,' the 'Botanical Miscellany,' the 'Journal of Botany,' the 'Icones Plantarum,' and other works of this industrious botanist, abundantly testify; and no single herbarium will afford the student of North American botany such extensive aid as that of Sir William Hooker.

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The botanical collections occupy a portion of this new building. A large room on the first floor, handsomely fitted up with glass cases, contains the cabinet of fruits, seeds, sections of stems, and curious examples of vegetable structure from every part of the known world. Among them we find an interesting suite of specimens of the wood, and another comprising the fruits or nuts of nearly all the trees of this country, both collected and prepared by the younger Michaux. The herbaria now occupy a large room or hall, immediately over the former, perhaps 80 feet long and 30 feet wide above the galleries, and very conveniently lighted from the roof. Beneath the galleries are four or five small rooms on each side, lighted from the exterior, used as cabinets for study and for separate herbaria; and above them the same number of smaller rooms or closets, occupied by duplicate and unarranged collections. The cases which contain the herbaria occupy the walls of the large hall and of the side rooms. Their plan may serve as a specimen of that generally adopted in France. The shelves are divided into compartments in the usual manner; but instead of doors, the cabinet is closed by a curtain of thick and coarse brown linen, kept extended by a heavy bar attached to the bottom, which is counterpoised by concealed weights, and the curtain is raised or dropt by a pulley. Paper of a very ordinary quality is generally used, and the specimens are attached, either to half sheets or to double sheets, by slips of gummed paper, or by pins, or sometimes the specimen itself is glued to the paper. Genera or other divisions are separated by interposed sheets, having the name written on a projecting slip.

According to the excellent plan adopted in the arrangement of these collections, which is due to Desfontaines, three kinds of herbaria have been instituted; viz. 1. The general herbarium. 2. The herbaria of particular works or celebrated authors, which are kept distinct, the duplicates alone being distributed in the general collection. 3. Separate herbaria of different countries, which are composed of the duplicates taken from the general herbarium. To these, new accessions from different countries are added, which from time to time are assorted and examined, and those required for the general herbarium are removed to that collection. The ancient herbarium of Vaillant forms the basis of the general collection: the specimens, which are all labelled by his own hand, are in excellent preservation, and among them plants derived from Cornuti or Dr. Sarrasin, may occasionally be met with. This collection, augmented to many times its original extent by the plants of Commerson, Dombey, Poiteau, Leschenault, etc., and by the duplicates from the special herbaria, probably contains at this time thirty or forty thousand species. Of the separate herbaria, the most interesting to us is that made in this country by the elder Michaux, from whose specimens and notes the learned Richard prepared the '*Flora Boreali-Americana*.'

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There is also the very complete Newfoundland collection of La Pylaie, comprising about 300 species, and a set of Berlandier's Texan and Mexican plants, as well as numerous herbaria less directly connected with North American botany, which we have not room to enumerate. Here, however, we do not find the herbaria of several authors, which we should have expected. That of Lamarck, for instance, is in the possession of Professor Rœper at Rostock, on the shores of the Baltic; that of Poiret belongs to Moquin-Tandon of Toulouse; that of Bosc, to Professor Moretti of Pavia; and the proper herbarium of the late Desfontaines, which, however, still remains at Paris, now forms a part of the very large and valuable collections of Mr. Webb. The herbarium of Mr. Webb, although of recent establishment, is only second to that of Baron Delessert; the two being by far the largest private collections in France, and comprising not only many older herbaria, but also, as far as possible, full sets of the plants of recent collectors. The former contains many of Michaux's plants (derived from the herbarium of Desfontaines), a North American collection, sent by Nuttall to the late Mr. Mercier of Geneva, a full set of Drummond's collections in the United States and Texas, etc. The latter also comprises many plants of Michaux, derived from Ventenat's herbarium, complete sets of Drummond's collections, etc. But a more important, because original and perhaps complete set of the plants of Michaux, is found in the herbarium of the late Richard, now in the possession of his son, Professor Achille Richard, which even contains a few species that do not exist in the herbarium at the Royal Museum. The herbarium of the celebrated Jussieu, a fine collection, which is scrupulously preserved in its original state, by his worthy son and successor, Professor Adrien Jussieu, comprises many North American plants of the older collectors, of which several are authentic for species of Lamarck, Poiret, Cassini, etc.

The herbarium of DeCandolle at Geneva, accumulated throughout the long and active career of this justly celebrated botanist, and enriched by a great number of correspondents, is surpassed by few others in size, and by none in importance. In order that it may remain as authentic as possible for his published works, especially the 'Prodromus,' no subsequent accessions to families already published are admitted into the general herbarium, but these are arranged in a separate collection. The proper herbarium, therefore, accurately exhibits the materials employed in the preparation of the 'Prodromus,' at least so far as these were in Professor DeCandolle's own possession. As almost twenty years have elapsed since the commencement of this herculean undertaking, the authentic herbarium is of course much less rich in the earlier than in the later orders. The Compositæ, to which seven years of unremitting labour have been devoted, form themselves an herbarium of no inconsiderable size. It is unnecessary to enumerate the contributors to this collection (which indeed would form an extended list), since the author, at least in the later volumes of the 'Prodromus,' carefully indicates, as fully as the work permits, the sources whence his materials have been derived. The paper employed is of an ordinary kind, some-

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The imperial herbarium at Vienna, under the superintendence of the accomplished Endlicher, assisted by Dr. Fenzl, is rapidly becoming one of the most valuable and extensive collections in Europe. The various herbaria of which it is composed have recently been incorporated into one, which is prepared nearly after the English method. It however possesses few North American plants, except a collection made by Enslin (a collector sent to this country by Prince Lichtenstein, from whom Pursh obtained many specimens from the Southern States), and some recent contributions by Hooker, etc. There is also an imperfect set of the plants collected by Hænke (a portion of which are from Oregon and California), so far as they are yet published in the 'Reliquiæ Hænkeanæ' of Presl, in whose custody, as curator of the Bohemian museum at Prague, the original collection remains.

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The royal Prussian herbarium is deposited at Schöneberg (a little village in the environs of Berlin), opposite the royal botanic garden, and in the garden of the Horticultural Society. It occupies a very convenient building erected for its reception, and is under the superintendence of Dr. Klotzsch, a very zealous and promising botanist. It comprises three separate herbaria, viz. the general herbarium, the herbarium of Willdenow, and the Brazilian herbarium of Sello. The principal contributions of the plants of this country to the general herbarium, garden specimens excepted, consist of the collections of the late Mr. Beyrich, who died in Western Arkansas while accompanying Col. Dodge's dragoon expedition, and a collection of the plants of Missouri and Arkansas, by Dr. Engelmann, now of St. Louis; to which a fine selection of North American plants, recently presented by Sir William Hooker, has been added. The botanical collections made by Chamisso, who accompanied Romanzoff in his voyage round the world, also enrich this herbarium; many are from the coast of Russian America and from California; and they have mostly been published conjointly by the late Von Chamisso and Professor Schlechtendal in the '*Linnæa*,' edited by the latter.

The late Professor Willdenow enjoyed for many years the correspondence of Muhlenberg, from whom he received the greater part of his North American specimens, a considerable portion of which are authentic for the North American plants of his edition of the '*Species Plantarum*.' In addition to these, we find in his herbarium many of Michaux's plants, communicated by Desfontaines, several from the German collector Kinn, and perhaps all the American species described by Willdenow from the Berlin garden. It also comprises a portion of the herbarium of Pallas, the Siberian plants of Stephen, and a tolerable set of Humboldt's plants. This herbarium is in good preservation, and is kept in perfect order and extreme neatness. As left by Willdenow, the specimens were loose in the covers, into which additional specimens had sometimes been thrown, and the labels often mixed; so that much caution is requisite to ascertain which are really authentic for the Willdenovian species. To prevent further sources of error, and to secure the collection from injury, it was carefully revised by Professor Schlechtendal while under his management, and the specimens attached by slips of paper to single sheets; and all those that Willdenow had left under one cover, as the same species, are enclosed in a double sheet of neat blue paper. These covers are numbered continuously throughout the herbarium, and the individual sheets or specimens in each are also numbered, so that any plant may be referred to by quoting the number of the cover and that of the sheet to which it is attached. The arrangement of the herbarium is unchanged, and it precisely accords with this author's edition of the '*Species Plantarum*.' Like the general herbarium, it is kept in neat portfolios, the back of which consists of three pieces of broad tape, which, passing through slits near each edge of the

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No. 6. *On the Development of the Reproductive Organs of the Misseltoe (Viscum album, Linn.).* By M. DECAISNE. (Ann. des Sci. Nat. n. s. xiii. p. 292.)*

THE male flower of the Misseltoe begins to be visible for nearly a year before its expansion. The anther is then not distinguishable from the green calyx by which it is embraced, except by the absence of colour, being formed of cellular tissue, the meshes of which are of similar form and dimensions. Somewhat later, in this interior and colourless portion, are formed many lacunæ, which apparently result from the destruction of the cellular tissue over these points, and which become filled with a mucilaginous fluid. A little later still, this mucilage is observed to be composed of utricles, with soft, very thin and transparent walls, considerably larger than the utricles of the adjacent parts, and connected solely by a viscous fluid. At this time the anther is constituted of three kinds of cellules; viz. the primi-

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